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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR      | ATTORNEY DOCKET NO.          | CONFIRMATION NO.       |
|---|-------------|---------------------------|------------------------------|------------------------|
| 10/561,093  | 05/02/2006  | Eive Tord Ronny Allansson | JMYT-359US                   | 2466                   |
| 23122   | 7590        | 02/06/2008                |                              |                        |
| RATNERPRESTIA<br>P O BOX 980<br>VALLEY FORGE, PA 19482-0980 |             |                           | EXAMINER<br>EDWARDS, LOREN C |                        |
|   |             |                           | ART UNIT<br>3748             | PAPER NUMBER           |
|   |             |                           | MAIL DATE<br>02/06/2008      | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                               |                                  |  |
|------------------------------|-------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/561,093 | Applicant(s)<br>ALLANSSON ET AL. |  |
|                              | Examiner<br>Loren C. Edwards  | Art Unit<br>3748                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/16/05</u> | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

2. The information disclosure statement (IDS) submitted on 12/16/05 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-16, and 18-24 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Bromberg et al. (U.S. 6,560,958). Bromberg discloses a method of treating an exhaust gas of a lean-burn reciprocating engine containing NO<sub>x</sub> (Col. 1, Line 54 – Col. 2, Line 11), which method comprising sorbing said NO<sub>x</sub> on at least one NO<sub>x</sub> sorber when the exhaust gas is lean (Fig. 1, No. 32; Col. 3, Lines 9-14), intermittently contacting the at least one NO<sub>x</sub> sorber with an agent effective to convert NO<sub>x</sub> to N<sub>2</sub> thereby to regenerate the at least one NO<sub>x</sub> sorber (Col. 3, Lines 14-20) and feeding

effluent of the intermittent contacting step to the engine inlet (Fig. 1, No. 36; Col. 3, Lines 20-30).

5. With regards to claim 2, Bromberg discloses the method of claim 1, as described above, and further wherein the sorbing step comprises simultaneously contacting the lean exhaust gas with at least two NO<sub>x</sub> sorbers arranged in parallel (Fig. 3, No. 32 and 42), and wherein the intermittently contacting step comprises intermittently contacting fewer than all of the at least two NO<sub>x</sub> sorbers simultaneously with said agent (Col. 4, Lines 18-32).

6. With regards to claim 3, Bromberg discloses the method of claim 1, as described above, and further wherein the exhaust gas flow through the at least one NO<sub>x</sub> sorber being regenerated during the intermittently contacting step is less than in a NO<sub>x</sub> sorber not being regenerated (Col. 4, Lines 18-32), wherein substantially all of the effluent from the at least one NO<sub>x</sub> sorber being regenerated by the intermittent contacting step is fed to the engine inlet (Fig. 1, No. 36; Col. 3, Lines 42-55).

7. With regards to claim 4, Bromberg discloses the method of claim 1, as described above, and further wherein the agent is a non-selective reductant (Col. 3, Lines 14-20).

8. With regards to claim 5, Bromberg discloses the method of claim 4, as described above, and further wherein the non-selective reductant is engine fuel (Fig. 1, No. 18; Col. 3, Lines 5-8).

9. With regards to claim 6, Bromberg discloses the method of claim 1, as described above, and further wherein the agent is a nitrogen hydride (Col. 4, Lines 53-65 - Ammonia).

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10. With regards to claim 7, Bromberg discloses the method of claim 1, as described above, and further comprising catalytically oxidizing HC and CO to steam, CO<sub>2</sub>, and/or NO to NO<sub>2</sub> upstream of the at least one NO<sub>x</sub> sorber (Col. 2, Lines 58-67).

11. With regards to claim 8, Bromberg discloses the method of claim 7, as described above, and further comprising collecting particulate matter between the step of NO oxidation and the step of NO<sub>x</sub> sorption (Col. 4, Line 66 – Col. 5, Line 14).

12. With regards to claim 9, Bromberg discloses a lean-burn reciprocating engine (Col. 1, Line 54 – Col. 2, Line 11) emitting exhaust gas containing NO<sub>x</sub> and having a treatment system comprising at least one NO<sub>x</sub> sorber (Fig. 1, No. 32; Col. 3, Lines 9-14) for sorbing NO<sub>x</sub> when the exhaust gas is lean, means for intermittently contacting the at least one NO<sub>x</sub> sorber with an agent effective to convert NO<sub>x</sub> to N<sub>2</sub> to regenerate the at least one NO<sub>x</sub> sorber (Col. 3, Lines 14-20) and means for feeding effluent from the intermittently contacting step to an engine inlet (Fig. 1, No. 36; Col. 3, Lines 20-30).

13. With regards to claim 10, Bromberg discloses the engine of claim 9, as described above, and further comprising exhaust gas recirculation means for use in normal or occasional modes of operation (Fig. 1, No. 36; Col. 3, Lines 20-30).

14. With regards to claim 11, Bromberg discloses the engine of claim 9, as described above, and further wherein the at least one NO<sub>x</sub> sorber comprises at least two NO<sub>x</sub> sorbers arranged in parallel (Fig. 3, No. 32 and 42), and further comprising a means for selectively contacting fewer than all of the at least two NO<sub>x</sub> sorbers with the agent (Col. 4, Lines 18-32).

15. With regards to claim 12, Bromberg discloses the engine of claim 11, as described above, and further comprising means for reducing an exhaust gas flow to one of the at least two NOx sorbers when the one of the at least two NOx sorbers is being regenerated relative to an exhaust gas flow to another NOx sorber not being regenerated (Col. 4, Lines 18-32), and means for feeding to the engine inlet substantially all of an effluent from the one of the at least two NOx sorbers being regenerated (Fig. 1, No. 36; Col. 3, Lines 42-55).

16. With regards to claim 13, Bromberg discloses the engine of claim 9, as described above, and further wherein the at least one NOx sorber is associated with injector means (Fig. 1, No. 24) for introducing the agent to the exhaust gas at the inlet of the at least one NOx sorber during regeneration.

17. With regards to claim 14, Bromberg discloses the engine of claim 9, as described above, and further wherein the agent comprises a supply of agent (Fig. 1, No. 18; Col. 3, Lines 5-8).

18. With regards to claim 15, Bromberg discloses the engine of claim 14, as described above, and further wherein the agent is a non-selective reductant (Col. 3, Lines 14-20).

19. With regards to claim 16, Bromberg discloses the engine of claim 14, as described above, and further wherein the agent is engine fuel (; Col. 5, Lines 17-19).

20. With regards to claim 18, Bromberg discloses the engine of claim 14, as described above, and further wherein the agent is a nitrogen hydride (Col. 4, Lines 53-65 - Ammonia).

21. With regards to claim 19, Bromberg discloses the engine of claim 9, as described above, and further comprising means for controlling the intermittent regeneration of the at least one NOx sorber and a means for feeding the effluent from at least one NOx sorber being regenerated to the engine inlet (Fig. 1, No. 36; Col. 3, Lines 20-30; Col. 3, Lines 43-55), wherein the amount of regeneration agent released into the atmosphere is reduced relative to a similar engine lacking the means for feeding the effluent from the at least one NOx sorber being regenerated to the engine inlet.

22. With regards to claim 20, Bromberg discloses the engine of claim 9, as described above, and further wherein the system further comprises an oxidation catalyst disposed upstream of the at least one NOx sorber for catalyzing the oxidation of HC and CO to steam and CO<sub>2</sub> and/or NO to NO<sub>2</sub> (Col. 2, Lines 58-67).

23. With regards to claim 21, Bromberg discloses the engine of claim 9, as described above, and further wherein the system further comprises a particulate matter filter located between the NO oxidation catalyst and the at least one NOx sorber (Col. 4, Line 66 – Col. 5, Line 14).

24. With regards to claim 22, Bromberg discloses the method of claim 4, as described above, and further wherein the non-selective reductant is selected from the group consisting of hydrocarbon (HC), CO, and hydrogen (Col. 3, Lines 14-20).

25. With regards to claim 23, Bromberg discloses the engine of claim 10, as described above, and further wherein the EGR means comprises a pump (Fig. 1, No. 26 – engine is a pump).

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26. With regards to claim 24, Bromberg discloses the engine of claim 15, as described above, and further wherein the non-selective reductant is selected from the group consisting of hydrocarbon, CO, and hydrogen (Col. 3, Lines 14-20).

***Claim Rejections - 35 USC § 103***

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

29. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bromberg. Common rail fuel injection is notoriously well known in the art so as to be proper for official notice.

***Conclusion***

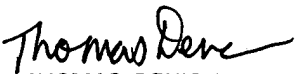
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2756. The examiner can normally be reached on M-TH 5:30-4.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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